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FACT SHEET

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FOR THE
CONSUMER



UNITED STATES
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CURRENT RECORDS

The Africanized Honey Bee

The Africanized honey bee, an aggressive hybrid that has spread over large areas of tropical South America, is a source of recent concern both to the public because of its stinging behavior and to the American beekeeping industry because of the belief that its unique movement patterns may alter the genetic quality of domestic bee stocks which ensure American crop production. The bees, which were accidentally released from research hives in Brazil in 1956, have spread as far north as Venezuela. Researchers, monitoring this spread, are studying the behavior and life cycles of the hybrid. Studies have already developed the technology and handling procedures for successfully managing this bee.

The Africanized honey bees are descendents of 26 colonies of honey bees (*Apis mellifera adansonii*) from Africa. In 1956, a noted Brazilian geneticist brought the bees to his country to interbreed with European-type honey bees to produce a new type better suited to the South American tropics. The Africanized honey bees swarmed from experimental colonies near Sao Paulo, Brazil, and interbred naturally in the wild with the European-type honey bees of the region. These interbreedings resulted in hybrids that are high honey producers, outproducing the original European strains. They pollinate crops as effectively as the European strains and thrive in tropical and semitropical climates. Over the last two decades, the hybrids have spread over most of Brazil and adjacent South American countries.

Although the Africanized honey bee is highly aggressive, its sting is *no more venomous than that of our domestic honey bee* and there is no evidence it causes



Figure 1: The Africanized honey bee (*Apis mellifera adansonii*).

more human fatalities than any other kind of bee. The Africanized honey bee chases would-be targets farther and in greater numbers. Like all honey bees, when it stings it loses its stinger, then dies. Some people are highly allergic to bee venom; however, most people can absorb several stings with only itchy, uncomfortable swellings resulting.

Swarming is the means by which all bees form new colonies. The queen bee leaves with about half the bees in the colony to find a new home. The bees remaining in the hive choose a new queen. Thus, by swarming, the original colony divides itself in two. Africanized honey bees swarm much more often than domestic bees and thus spread their colonies much faster.

Africanized honey bees leave the colony *completely* to move to a new location. This trait is known as absconding. European types rarely do this. Africanized bees abscond on flights as long as 50 miles, a trait that has contributed to an average movement rate of 200 miles a year. This has taken them as far northward as Venezuela, westward into Peru and Bolivia, and southward into Uruguay and Argentina. Absconding was necessary for survival in Africa when areas were struck by dry spells and bees were forced to move to find food.

American beekeepers do not want this "absconding" trait bred into our domestic lines of bees. A tendency to readily abscond during shortages of nectar or pollen, or when being transported by truck, would be highly disruptive to our beekeeping system and disturb the vital pollination of U.S. crops.



Figure 2: SEA entomologists capture an Africanized honey bee swarm cluster on a tree branch in South America. Scientists will move these bees to a standard hive to study the bee's habit patterns. Africanized honey bees swarm frequently.

Migration Factors

Researchers, supported by the Science and Education Administration (SEA), closely detailed the movement, spread, and habits of Africanized honey bees in South America at a research station in French Guiana. There, under a cooperative agreement with the University of Kansas, they conducted a 3-year study that collected valuable data on brood cycles, swarming and absconding patterns, migration distances, and such behavioral aspects of the Africanized honey bee as mating and stinging habits.

To accomplish this, the investigators in Guiana developed an 80-colony apiary of highly Africanized bees. Work with these colonies allowed them to develop a comprehensive understanding of the hybrids' behavior and the management techniques to handle them.

In 1978, the study site in French Guiana was moved to Venezuela where a bee-breeding laboratory was established. The northern and western front of the Africanized honey bee migration will be monitored from this location for 3 or more years.

Research conducted in Venezuela by SEA-supported scientists from the University of Kansas focuses on the migration distances and swarming and absconding traits of the hybrid bee. Other studies cover the mating and stinging behavioral aspects. Venezuelan agriculturists have been trained already in the bee handling and management practices that were developed through SEA research.

Investigators who studied the migratory habits of the Africanized bees noted that these bees act less aggressively and spread more slowly in the temperate climates of South America. Bees that moved southward from Sao Paulo to latitudes comparable with those of the lower United States have become somewhat milder in nature and easier to handle. Only bees that spread northward into tropical areas have maintained the aggressive characteristics that make the bees undesirable.



Figure 3: An SEA researcher in French Guiana holds up a frame honeycomb covered with Africanized honey bees. A 2-year study in that country, accomplished in cooperation with

scientists from the University of Kansas, yielded valuable information on the behavior of the hybrid bee.

Potential For Spread

What are the possibilities of the Africanized honey bees reaching the borders of the Southern United States?

Not many scientists believe that the vast deserts of Mexico will serve as a barrier to the hybrids' northern migration as the wastelands of the Sahara Desert have blocked their progress in Africa. There are north-south corridors of favorable environment that could enable them to skirt the deserts. An inhibiting factor is the inability of the hybrid to endure winters longer than several months. The possibility exists, however, that at the present migration rate the Africanized honey bees could spread naturally through Central America and Mexico and reach northern Mexico in an estimated 11 to 15 years.

Strict quarantine regulations are being enforced by the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture to prevent Africanized bees from arriving in this country ahead of their natural migration. Present legislation prohibits importing honey bees into the United States from most countries. APHIS port inspectors check

incoming aircraft, ships, and vehicles to prevent Africanized bees from accidentally entering or being illegally imported into this country.

Management Practices

Africanized honey bees can—and are—being safely managed by beekeepers knowledgeable of special handling practices. Because of the aggressive characteristics of the hybrid, some beekeepers must work populous colonies wearing coveralls and gloves in addition to the usual veil protection. This is uncomfortable attire in a tropical climate. Others, researchers and commercial beekeepers in South America accustomed to the habits of the hybrids and recognizing when it is safe to do so, often forego the extra protective clothing without adverse effects. Knowledge in handling the hybrid has proved worthwhile: Under tropical conditions Africanized bees can produce up to 50 percent more honey than European bees and are as effective in crop pollination.

In various sections of Brazil, where domestic colonies of bees have been effectively maintained by expert beekeepers, constant culling of the most aggressive colonies and replacement with gentle strains has taken place. As a result, stinging by honey bees is rarely a problem in these areas.

Genetic and Behavioral Studies

To maintain the desirable characteristics and quality of American bee stocks, and to protect them from unwanted genetic changes, SEA researchers in this country are refining artificial insemination techniques on queen

bees and encouraging further use of these techniques by domestic bee breeders.

The technique of using artificial insemination of queen bees to control mating of honey bees was originally only a research tool. However, in 1977 it was adapted for commercial queen production. In the next decade this technique is expected to have wide usage. This work has been a major concern of SEA researchers at the bee-breeding laboratory at Baton Rouge, La. If Africanized bees ever become a problem in this country, controlled mating through artificial insemination will be one of the most important tools available in supplying and maintaining desirable honey bees.